

**THE NCE  
SELECTION COMMITTEE  
REPORT**

**January 2000**

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## REMARKS FROM THE CHAIR

The Networks of Centres of Excellence (NCE) Selection Committee met on January 13 and 14, 2000, to evaluate the twelve proposals submitted to the 1999 NCE open competition. This proved to be a great challenge to the Selection Committee, but the challenge was met. A Selection Committee of extraordinary ability and breadth was appointed, and all members contributed fully to the selection process.

The process began in June 1999, with the evaluation of the 45 letters of intent according to the five published equally weighted selection criteria. Twelve were judged to have the highest potential and the proponents were invited to apply. During the fall, these full applications were examined in depth by twelve expert panels in a review process that included meetings with the proponents and their partners. In January 2000, the Selection Committee considered the reports of these expert panels together with the full applications.

The reports of the expert panels proved extremely useful. They provided a detailed and objective assessment of the strengths and weaknesses of each application according to the five selection criteria. In addition, the Chairs of the twelve expert panels joined the Selection Committee by teleconference to answer questions that arose during the discussion of the applications.

The Selection Committee's discussions were extensive and challenging, and led to consensus on its recommendations. The competition was constrained by the available 1999-2000 budget. Therefore, the Selection Committee transmitted a priority-ranked list of three new NCEs recommended for funding along with a list of recommended funding levels to the NCE Steering Committee for final decision.

Based on the in-depth review of the nine remaining applications, the Selection Committee agreed that some proposals focused on important scientific areas for Canada, and could likely be improved to meet the standards of excellence of the NCE program with some additional work. These applicant groups should be encouraged to continue to work as a group in developing ideas for the preparation for future NCE competitions.

Finally, let me offer my personal thanks to the members of the Selection Committee for the expertise, energy, and integrity they brought to the process. Their reward is the knowledge that they have participated in the decision to select three outstanding Networks of Centres of Excellence that hold the promise of important advances in knowledge that will benefit Canadians in many ways. With the experience

of the NCE program as an indicator, I am sure they will be proud of the work we have done together.

Martin Godbout, Ph.D.  
Chair, NCE Selection Committee

## BACKGROUND

In February 1999, the federal government announced its decision to increase the budget of the Networks of Centres of Excellence (NCE) program to an annual allocation of \$77.4 million.

In March 1999, the NCE Steering Committee decided to hold a competition as quickly as possible and to fund a new NCE, the Canadian Institute for Photonic Innovations (CIPI), which had been recommended for funding during the previous competition. In addition it announced that a targeted competition would be held in 2000.

The NCE program is an integral part of the government's Science & Technology strategy. The program is built on the foundation of research support from the federal granting councils – the Natural Sciences and Engineering Research Council (NSERC), the Medical Research Council (MRC), and the Social Sciences and Humanities Research Council (SSHRC). By investing in areas that have strategic importance for Canada, the networks produce significant research discoveries and innovations; ensure that they are transferred quickly to potential industrial users and public policy-makers; and train highly qualified researchers, often outside the university setting. NCE funding is used as leverage by the networks to attract private and public sector collaboration. Canada derives social as well as economic benefits from the commercialization of marketable products and processes originating from network research. Network funding is incremental and is provided only for a finite period of time with the goal of creating relationships and partnerships that will endure and flourish well beyond the period of NCE funding.

At present there are 15 networks conducting leading-edge research in strategic areas. These networks are at different stages of maturity, seven having been created in 1989, four in 1995 and four in 1998. The current funding allocated to these networks is in the order of \$51 million annually.

In March 1999, an NCE competition for new networks with an annual budget of approximately \$13 million was announced. Forty-five letters of intent were received by the competition deadline of June 1, 1999. A Selection Committee was appointed by the NCE Steering Committee (comprised of the Presidents of the three granting councils — NSERC, MRC and SSHRC — and the Deputy Minister of Industry Canada). The terms of reference, membership and short biographical notes on the members can be found in appendices II, III and IV, respectively. The NCE Selection Committee met in June 1999 and recommended that 12 applicant groups be invited to submit a full application.

On October 4, 1999, 12 applications were received by the NCE Directorate. The applicants were subjected to a full day in-depth review by an Expert Panel. The proposed networks were thoroughly assessed according to the five published selection criteria (Appendix I) and the appropriateness of the budgets requested was evaluated. A confidential Expert Panel Report was submitted to the NCE Selection Committee to assist the members in the final evaluation of the 12 applications.

The Selection Committee reviewed the applications and the Expert Panel reports and met in January for final deliberations. The Selection Committee submitted the funding recommendations in this report to the NCE Steering Committee for approval.

## **COMPETITION PROCESS**

February 16, 1999	Announcement of the federal government decision to increase the budget of the Networks of Centres of Excellence (NCE) program to an annual allocation of \$77.4 million.
March 17, 1999	Announcement of the 1999 competition for new networks in the NCE program.
June 1, 1999	Deadline for submission of letters of intent.
June 21-22, 1999	Meeting of the NCE Selection Committee to review letters of intent and invite selected applicants to submit full applications.
October 4, 1999	Deadline for submission of full applications.
January 13-14, 2000	Meeting of the NCE Selection Committee to review the full applications and make final recommendations on funding to the NCE Steering Committee.
January 20, 2000	Meeting of the NCE Steering Committee to review funding recommendations of the NCE Selection Committee and make a final decision.

## RECOMMENDATIONS

The NCE Selection Committee recommends support for three networks as indicated below in alphabetical order. The level of funding for years 5 to 7 will be determined following a thorough review in year 4.

### AquaNet

Year 1 at \$3,600,000  
Year 2 at \$3,600,000  
Year 3 at \$3,600,000  
Year 4 at \$3,600,000

### The Canadian Network for Vaccines and Immunotherapeutics of Cancer and Chronic Viral Diseases (CANVAC)

Year 1 at \$4,700,000  
Year 2 at \$4,700,000  
Year 3 at \$4,700,000  
Year 4 at \$4,700,000

### The Canadian Stroke Network (CSN)

Year 1 at \$4,700,000  
Year 2 at \$4,700,000  
Year 3 at \$4,700,000  
Year 4 at \$4,700,000



## **SUMMARY OF THE NETWORKS RECOMMENDED FOR FUNDING**

### **AQUANET**

The goal of AquaNet is to position the Canadian aquaculture industry for the future by increasing the efficiency of aquaculture production through species diversification, biotechnology, environmental sustainability and training of highly qualified personnel, while simultaneously addressing environmental and social aspects.

AquaNet will accomplish its goal by focusing on three complementary and interrelated theme areas, Animal Production, Environmental Integrity and Socio-Economic Impacts, with each theme consisting of several modules, with associated teams of researchers. Research will address finfish and shellfish aquaculture issues, using a multidisciplinary approach, drawing on expertise from across Canada and from international collaborations. Partners and Sponsors of AquaNet will have access to a network of high-calibre researchers, located in Canada and internationally, and preferred access to state-of-the-art facilities to conduct industrially driven research and training of personnel.

AquaNet will become a mechanism for focusing, accelerating and expanding our national efforts in research and development among university and government scientists, non-government organizations, and within the aquaculture industry. In addition (as, upon receipt of funding by the NCE program, AquaNet forecasts being able to leverage the federal NCE investment threefold), over seven years, AquaNet will direct approximately \$8.5 million to leading-edge aquaculture research and development. The success of AquaNet will have significant ramifications for the Canadian aquaculture industry in the global marketplace. In order to make this happen, however, AquaNet requires industrial support at all levels, from tacit support of the concept to in-kind and cash contributions.

As one of AquaNet's primary objectives is to strive for the continued improvement and diversification of the aquaculture industry in Canada, AquaNet's Industry Partners, Government Partners and University Partners are integral to its success. Industry Partners will be relied upon to communicate industry-identified needs to our academic researchers, and all AquaNet Network Partners will be active participants, consulted on

a regular basis. They will also benefit from frequent briefings, so that they have first access to network information and new technologies.

Focused, industrially relevant, and socially responsible research and development are key factors in the competitive development of the aquaculture industry. In view of Canada's scattered efforts to date in aquaculture research, nationwide coordination and synergy, as well as strong funding support, are key for future success. AquaNet will provide the essential research knowledge, training, and communications structure for that to occur.

## **THE CANADIAN NETWORK FOR VACCINES AND IMMUNOTHERAPEUTICS OF CANCER AND CHRONIC VIRAL DISEASES (CANVAC)**

CANVAC is a network of highly recognized Canadian scientists specialized in the fields of immunology, virology and molecular biology, who, in collaboration with Canadian biotechnology and pharmaceutical companies, are jointly aiming at the development of safe and effective vaccines to protect the public from cancer and life-threatening viral infections.

Chronic viral diseases and cancer exert a heavy burden on society, in terms of both human lives and economic factors. In Canada, as globally, cancer is the leading cause of potential years of life lost by premature death and the second leading cause of death. It is estimated that as many as 200 million people worldwide harbour the hepatitis C virus (HCV), with as many as 275,000 in Canada. Therefore, chronic HCV infection poses a serious threat to public health in the next century. The global advance of acquired immunodeficiency syndrome (AIDS) following infection with the human immuno-deficiency virus is unrelenting — some 16,000 people around the world are infected with HIV every day, and AIDS accounted for 2.5 million deaths in 1998.

One of the great advances in the prevention of disease and the improvement of human health has been the development of prophylactic vaccines and the systematic vaccination against infectious diseases. The common immunological pathways and approaches to the development of vaccines for the prevention and treatment of a number of chronic and deadly diseases are of pivotal importance. Thus CANVAC presents a plan for development of novel vaccine technologies and their application to the prevention and the treatment of certain forms of cancer, hepatitis C and HIV infections.

Vaccine development and production in Canada has been a highly successful area of research and business for the past 25 years. CANVAC aims at becoming a self-sustained knowledge-based institution providing a number of products and services to Canadians, foremost among which will be vaccines to prevent and/or treat the diseases mentioned above. CANVAC promises to pool knowledge, resources and funding, to meet these formidable objectives.

## **THE CANADIAN STROKE NETWORK (CSN)**

The Canadian Stroke Network's research program will investigate and propose testable solutions to the serious health and social issues associated with stroke. The goals of the CSN's research program are to decrease the functional, economic and social consequences of stroke on the individual and on society.

Stroke is a serious and common neurological illness. A stroke occurs every ten minutes in Canada, resulting in approximately 50,000 new strokes per year, almost double the number from 15 years ago. Stroke commonly results in death, or alternatively in enormous disability. Currently, there are approximately 350,000 Canadians alive who have suffered a stroke. For every ten Canadians suffering a stroke, two will die, six will have varying degrees of disability, and two will achieve some neurological recovery but remain with diminished quality of life. These survivors are all at risk of suffering further strokes. Estimates of the current financial burden of stroke in Canada approach \$4 billion annually, with hospital care for acute stroke and for long-term care composing the largest share. If stroke is left unchecked, this would be expected to escalate to \$6 billion by 2010.

Stroke has significant social as well as economic consequences. Less than fifty percent of all stroke patients will resume employment and the effect of stroke on society is not limited to those who suffer the disease. The occurrence of stroke has a ripple effect on many individuals in addition to the patient, since most stroke survivors require help to perform their daily living functions. One year after the onset of a stroke in their family member, half the caregivers develop an emotional illness, primarily depression and anxiety.

Despite this sombre picture, studies allow us to state that many strokes are preventable. Controlling risk factors such as high blood pressure, cholesterol and heart disease decreases the incidence of stroke. Recent studies indicate that stroke may also be treatable, and the advent of therapy for the acute phase of stroke has put pressure on our health care system. However, there is a growing gap between the expectation of the public that stroke is now treatable and the ability of our health system to deliver timely care of high quality to stroke patients.

The CSN brings together researchers in basic and clinical sciences and in social sciences, epidemiology, health economics and policy, together with database experts and rehabilitation specialists. This multidisciplinary research team will work with the

Heart and Stroke Foundations, hospitals, biotechnology companies, pharmaceutical firms, health care practitioners, and emergency care personnel to advance the understanding of stroke and improve the treatment of this illness.

## APPENDIX I

### Selection and Evaluation Criteria

To ensure that the program objectives are met, proposals are assessed against five equally weighted criteria. Networks are also evaluated on an ongoing basis during tenure of a grant against these same criteria. A threshold of excellence must be exceeded for each criterion. These threshold limits must continue to be met as a condition for holding an NCE grant. The descriptors following each criterion are not all-inclusive.

#### **Excellence of the Research Program**

- The excellence, focus and coherence of the research program;
- The extent to which the program will contribute to Canada's ability to lead in areas of research with high economic and/or social impact;
- The extent to which new and emerging social and ethical issues, where relevant, will be addressed in the research program;
- The quality of the researchers and their ability to contribute to the research program;
- The relationship of the research program to similar work conducted elsewhere in Canada and abroad;
- The value added by the network approach.

#### **Highly Qualified Personnel**

- The ability to develop and retain outstanding researchers in research areas and technologies critical to Canadian productivity, economic growth, public policy and quality of life;
- Training strategies that promote multidisciplinary and multisectorial research approaches and encourage trainees to consider the economic, social and ethical implications of their work.

#### **Networking and Partnerships**

- Effective research and technology development links between academic institutions, federal and provincial agencies and private sector participants;
- Multidisciplinary, multisectorial approaches in the research program;
- Evidence that an effort has been made to include all suitably qualified groups;
- Optimization of resources through the sharing of equipment and research facilities, databases and personnel;

- Presence, nature and extent of contributions from the private sector and federal and provincial agencies, with the prospects for increasing commitments as the work progresses.

### **Knowledge Exchange and Technology Exploitation**

- Prospect for new products, processes or services that can be commercialized by firms operating in Canada and will strengthen the Canadian industrial base, enhance productivity, and contribute to long-term economic growth and social benefits;
- Prospect for social innovation and the implementation of effective public policy through collaboration with the public sector;
- Effective collaboration with the private and public sectors in technology, market development, and public policy development;
- The impact, or potential impact, of technology and knowledge transfer on the science and technology capabilities of private and public sector partners;
- Effective management and protection of intellectual property resulting from network-funded research.

### **Management of the Network**

Each network must possess an organizational structure appropriate for the management of the research and business functions of a complex multidisciplinary, multi-institutional program. These elements must include:

- A board and committee structure to ensure that appropriate policy and financial decisions are made and implemented;
- The presence of effective leadership and expertise in the research and the business management functions;
- Effective research planning and budgeting mechanisms;
- Effective internal and external communications strategies.

## **APPENDIX II**

### **TERMS OF REFERENCE FOR THE NCE SELECTION COMMITTEE 1999**

The members of the Selection Committee are selected and appointed by the NCE Steering Committee.

The Selection Committee will evaluate the applications according to the published selection criteria. As part of the evaluation of applications, the Committee will have peer review reports from expert panels for each application that summarize the panels' findings, including meetings with representatives from each group of applicants. The chair of each expert panel will be available to respond to questions and provide additional information during the deliberations of the Selection Committee. The Committee will rate all of the applications on each of the selection criteria. To be successful, a network must be judged excellent in every criterion.

The Selection Committee will transmit a priority-ranked list of networks recommended for funding, along with the recommended duration and level of award for each network, to the NCE Steering Committee for decision. The Selection Committee's report, which provides the rationale for the recommendations along with a summary analysis of each application, will be made public. The list of new networks will be transmitted to the Ministers of Industry and Health.



## APPENDIX III

### Membership of the NCE Selection Committee

#### NCE SELECTION COMMITTEE

#### Letter of Intent Stage

June 21-22, 1999

**Chair:**

**Martin Godbout**

President  
Hodran Inc.  
Québec QC

**Members:**

**Ruth Arnon**

Professor  
Weizmann Institute of Science  
Rehovot ISRAEL

**Bill Cheliak**

Director  
Progressive Genetics Systems Ltd  
Ottawa ON

**Ian Dowdeswell**

President  
Delian Consultants Ltd  
West Vancouver BC

**Gérard Duhaime**

Director of GÉTIC  
Laval University  
Beauport QC

**Richard Fuchs**

President  
Futureworks Inc.  
Torbay NFLD

**Mark W. Rosenberg**

Professor  
Department of Geography  
Queen's University  
Kingston ON

**Pierre Tremblay**

President  
Tecta Inc.  
Chicoutimi QC

**Eva Turley**

Division of Cardiovascular Research  
The Hospital for Sick Children  
Toronto ON

**NCE SELECTION COMMITTEE  
January 13-14, 2000**

**Chair:**

**Martin Godbout**

President  
Hodran Inc.  
Quebec QC

**Members:**

**Ruth Arnon**

Professor  
Weizmann Institute of Science  
Rehovot ISRAEL

**Gilles Brassard**

Département d'information et de  
recherche opérationnelle  
Université de Montréal  
Montreal QC

**Bill Cheliak**

Director  
Progressive Genetics Systems Ltd  
Ottawa ON

**Ian Dowdeswell**

President  
Delian Consultants Ltd  
West Vancouver BC

**Richard Fuchs**

President  
Futureworks Inc.  
Torbay NFLD

**Brian Garside**

President  
Opto-Electronics Inc.  
Oakville ON

**Camille Limoges**

President  
Conseil de la science et de la  
technologie du Québec  
Sainte-Foy QC

**David Owen**

Director, Industrial Collaboration &  
Licensing  
Technology Transfer Group  
Medical Research Council  
London UK

**Mark W. Rosenberg**

Professor  
Department of Geography  
Queen's University  
Kingston ON

**David B. Shindler**

President and CEO  
Milestone Medica Corporation  
Toronto ON

**Bruce Smith**

Chairman  
Smith Institute  
Guilford Surrey UK

## APPENDIX IV

### Biographical Notes of the NCE Selection Committee Members

#### Ruth Arnon

Former Vice-President (1988-1997) of the Weizmann Institute of Science. Prior to her appointment as Vice-President, she served as Head of the Department of Chemical Immunology, and as Dean of the Faculty of Biology. From 1985 to 1994, she was Director of the Institute's MacArthur Center for Molecular Biology of Tropical Diseases.

Ruth Arnon is a noted immunologist. She has made significant contributions to the fields of vaccine development and cancer research, and to the study of parasitic diseases. Along with Michael Sela, she developed Copaxone® a drug for the treatment of multiple sclerosis, which was approved by the U.S. Food and Drug Administration, and is presently marketed in the U.S., Canada and many other countries world wide.

Dr. Arnon is a member of the Israel Academy of Sciences, and presently chairs its Science Division. On the world scene, she is an elected member of the European Molecular Biology Organization (EMBO); and has served as President of the European Federation of Immunological Societies (EFIS), and as Secretary-General of the International Union of Immunological Societies (IUIS). Her awards include the Robert Koch Prize in Medical Sciences, Spain's Jiminez Diaz Memorial Prize, France's Legion of Honor, the Hadassah World Organization's Women of Distinction Award, the Wolf Prize for Medicine and the Rothschild Prize for Biology. She holds the Paul Ehrlich Chair in Immunochemistry.

#### Gilles Brassard

Professor in the computer and operational research department at the Université de Montréal, since receiving his Ph.D. from Cornell University in 1979. He has been visiting professor or researcher at the University of California at Berkeley (1984-85), CWI Amsterdam (1987), Philips Research Laboratory in Brussels (1988), the Lausanne Federal Polytechnical School (1988), the *École Normale Supérieure* of Paris (1994) and Wollongong University in Australia (1995).

Gilles Brassard received the E.W.R. Steacie Memorial Fellowship and the prix Urgel-Archambault in 1992, the Steacie Prize in 1994 and the Killam Fellowship in 1997. He was selected science and technology person of the year by *La Presse* in 1995, elected to the Royal Society of Canada's *Académie des sciences* in 1996, and elected foreign member of the Latvian Academy of Science in 1998.

He has written three books that have been translated into seven languages. From 1991 to 1997, he was editor-in-chief of the *Journal of Cryptology* and is currently on the editorial boards of the *Journal of Cryptology* and of *Design, Codes and Cryptography*. He was committee chair for the Crypto 89 project and a member of numerous conference organizing committees. He is on the boards of directors or scientific committees of ACFAS, MRC, the Waterloo Centre for Applied Cryptography and the International Association for Cryptologic Research.

Dr. Brassard is primarily interested in the applications of quantum mechanics in information processing. He is the co-inventor of quantum cryptography, quantum teleportation and quantum state purification techniques. MIT Press will soon publish the book that he is currently writing for computer specialists on quantum information processing.

### **W.M. (Bill) Cheliak**

He received his Ph.D. in Genetics from the University of Alberta in 1982. He has worked in both the government and private sectors in research and in management. From the mid-1980s to mid-1990s, he worked in the areas of forest biotechnology research and management, and was involved with teams responsible for successfully developing somatic embryogenesis and a transformation system for conifers, as well as a reliable transformation system for the spruce budworm and a viable bio-control system, based on baculoviruses, for the Gypsy Moth. Much of this base technology has been implemented in forest improvement and protection programs around the world.

Since the mid-1990's, Bill Cheliak has been working with Cobequid Life Sciences, a publicly traded Canadian biotechnology company specializing in aquaculture and veterinary health care products. He was responsible for establishing DNA vaccines in the company. Most recently, he established a cGMP plasmid DNA and viral vaccine production facility for in-house and contract manufacturing.

Dr. Cheliak has served on numerous grant committees for the Natural Sciences and Engineering Research Council (NSERC) and the Canada Foundation for Innovation. He also served as Editor of the *Canadian Journal of Forest Research* from 1991 to 1995.

**Ian J. D. Dowdeswell**

President of DELIAN Consultants Ltd., in West Vancouver. He holds a B.A.Sc. and an M.A.Sc. in Electrical Engineering, and has worked in the resource industries since 1963.

During the following 10 years, he worked for Canadian Arctic Gas Study Limited, Petro Canada Ltd., and MacMillan Bloedel Ltd. In 1985, he joined MPR Teltech Ltd., western Canada's largest telecommunications R&D-based systems integrator as Vice-President and Officer, and retired as V.P. Emeritus in March 1995. He then formed DELIAN Consultants Ltd., a company specializing in strategic planning and the identification and management of business risks for small to medium-sized businesses associated with the strategic application of telecommunications and computing technologies.

Mr. Dowdeswell is also currently a member of several boards. These include TigrSoft Inc.; FirstClass Systems Ltd.; the TeleLearning NCE; the BC Software Training Alliance; and SoftTracks Ltd.

**G rard Duhaime**

Director of G TIC, Laval University's centre for northern and aboriginal research, and a professor in the department of agri-food and consumer sciences economy, holder of the Louis-Edmond Hamelin Chair in northern social research and president of the International Arctic Social Sciences Association.

His main field of research is economic sociology and social change in the circumpolar Arctic. He is a founding member of the Metrind Bank, a statistical database on social conditions in the Canadian North, and a consumer behaviour researcher (credit and debt, biotechnology, consumer protection). He currently heads up numerous international research projects, including *Sustainable Development in the Arctic. Conditions for Food Security*, which involves 40 researchers and graduate students from five northern countries.

Dr. Duhaime belongs to many international associations and is the co-founder of the Circumpolar Arctic Social Sciences Ph.D. Network. He has published extensively in scientific journals and other reviews (*Sustainable Development in the North. Local Initiatives vs. Megaprojects* 1998; *Les Autochtones au Qu bec, Recherches sociographiques* 1994; *Le d veloppement des Peuples du Nord*, 1989; *Le pays des Inuit. La situation  conomique* 1983, 1987; *De l'Igloo au HLM. Les Inuit s dentaires et  tat-providence* 1985).

He earned a doctorate in the sociology of economics and a master's degree in political analysis from Laval University, and a bachelor of political science degree from the *Université de Montréal*. He has been a guest researcher at the Hamburg School of Economics and Politics (Germany) and the Krannert Graduate School of Management, Purdue University (U.S.).

### **Richard Fuchs**

President of Futureworks Inc., a rural information, communications and network technology consulting company that does business in Africa, Asia, Europe and North America. He lives and works from his home office in rural Torbay, Newfoundland.

A sociologist, Richard Fuchs has worked in rural informatics and rural development for 25 years. He was a Commissioner with the Newfoundland Economic Recovery Commission and the Vice President of Rural Development in the Newfoundland government. In 1988, he started and then led North America's first rural telecentres and online information and communications system for 10 years as the Chairman and CEO of the Newfoundland Crown Corporation, Enterprise Network Inc.

Mr. Fuchs has worked in the volunteer sector with Oxfam Canada and was a public servant and an Adjunct Professor of sociology at Memorial University for 18 years.

### **Brian Garside**

He received his doctoral degree from the University of Oxford in 1968 for work on the characteristics and operating properties of the He-Ne lasers. He then spent several years in the Coherent Wave Physics department at Bell Laboratories before joining the Engineering Physics Department of McMaster University. At McMaster, he investigated various aspects of lasers and electro-optics including work on pulsed CO<sub>2</sub> lasers, tunable diode lasers, optically pumped lasers, picosecond pulse generation and detection and fiber optical systems and components.

During this time, he was a co-founder of Opto-Electronics Inc. (incorporated in 1976), where he is now President and is responsible, amongst other things, for the company research and development effort concerning high-performance fiber optic test and measurement instrumentation.

He has served as a member of the Open panel of the Natural Sciences and Engineering Research Council (NSERC) Strategic Projects Program and as a member of the General Physics Grant Selection Committee of NSERC.

## **Martin Godbout**

He holds a B.Sc. in Biochemistry (1979) and a Ph.D. in Physiology and Molecular Endocrinology from Laval University. From 1985 to 1990, he conducted postdoctoral research in neuromolecular biology at the Scripps Research Institute, California.

In 1991, he joined the Faculty of Medicine, Laval University, as an Assistant Professor. The same year, the Quebec Foundation for Mental Disorder awarded him the *Grand Prix de Recherche* for his previous work on Alzheimer's disease. In 1994, Laval University awarded him the *Prix Summa* from the Faculty of Science and Engineering. It was at that time that he founded BioContact Québec, a bio-pharmaceutical partnership symposium.

Martin Godbout was President and General Manager of Société Innovatech Québec, a \$60-million technology investment fund (1994 to 1997); and then Senior Vice-President of BioCapital, a Canadian venture capital firm specializing in healthcare and biotechnology sectors. Since June 1999, he has been serving as the interim Executive Director of Genome Canada.

He is a member of the board of directors of several Canadian biopharmaceutical companies, foundations and scientific organizations such as the Natural Sciences and Engineering Research Council (NSERC), the Biotechnology Human Resource Council (BHRC), the Quebec Bio-Industries Association, the Medical Research Council of Canada's Standing Committee on Business Development and the "Conseil de la science et de la technologie" of Quebec. In 1999, he served as Chairman of the Selection Committee of the Networks of Centres of Excellence and of the Canada Foundation for Innovation.

## **Camille Limoges**

President of Quebec's *Conseil de la science et de la technologie* since January 1997. During his 25-year university career, he has worked at the *Université de Montréal*, Johns Hopkins University, Harvard University, the University of California (Irvine) and, finally, UQAM (*Université du Québec à Montréal*). He has also been extremely active as a consultant to Quebec and Canadian firms, particularly in the areas of communications on risk and the environment, as well as to governments and international organizations in the fields of the politics of science and technology. Lastly, during the 1980s, Dr. Limoges was deputy minister responsible for higher education, science and technology. He has contributed to more than two hundred research publications.



**David Owen**

Director, Industrial Collaboration and Licensing at the UK Medical Research Council (since 1990). He is responsible for liaison between the MRC and industry, and for the exploitation of the research findings from the MRC Institutes and Units. He gained the MRC approval to raise an MRC investment fund, UK Medical Ventures Fund. This has raised £40 million of private money; he is non-executive chairman of the fund's general partner, MVM Ltd.

A pharmacologist (Ph.D.1969) by training, he spent some 20 years in R&D in the pharmaceutical industry, prior to joining the MRC. He led the research resulting in the transfer of a number of compounds from research to development, including ropinerole, a drug marketed by SB for the treatment of Parkinson's disease, and for which he is the sole inventor on a key patent. He has served on the editorial board of a number of prestigious journals (including *British Journal of Pharmacology*, *Journal of Cardiovascular Pharmacology*, and *Journal of Neuropharmacology*), and has more than 80 refereed papers, and book chapters.

Within the MRC, in addition to increasing the volume of licensing, he has driven the growth in MRC "spin-out" companies, and was a founding member of the Board of Directors of Therexsys Ltd., Prolifix Ltd, RiboTargets Ltd., and Cambridge Genetics Ltd. He also led the creation of the MRC Collaborative Centre, Scotland (a laboratory-based technology transfer function/incubator).

David Owen has recently been appointed Chairman, the Cardiff Partnership Ltd., the company structure partnership between University College, Cardiff and the Welsh College of Medicine. He will also be a non-executive Director at the proposed exploitation company to be established by the European Molecular Biology Laboratory, Heidelberg, Germany. He has served on a number of government-appointed committees, both in the UK and in the US.

**Mark W. Rosenberg**

He received his B.A. from the University of Toronto (1975) and his M.Sc. (1976) and Ph.D. (1980) from the London School of Economics and Political Science. After teaching at the University of California at Los Angeles, the University of Ottawa and Carleton University, and working with Angus Reid and J.F. Hickling Management Consultants, he joined Queen's University in 1985. He is now a full Professor in the Department of Geography and has also taught in the School of Policy Studies.

His major research interests are focused on women's health, the elderly population, persons with disabilities, and the organization of, and access to, health care

and social services. He is currently working on a 3-year study of the “geographies of women’s health” funded by the Social Sciences and Humanities Research Council of Canada (SSHRC) and organizing a set of international workshops on “health and the environment” funded by the International Council of Scientific Unions (ICSU), the United Nations Environment Programme (UNEP) and SSHRC. He has just completed a 4-year study of seniors’ independence funded by Health Canada and is co-author of the recently published book, *Growing Old in Canada*.

Mark Rosenberg is currently the Chairperson of the Social Science Division of the Canadian Association on Gerontology, Secretary of the International Geographical Union Commission on Health, Environment and Development and Chairperson of the Association of American Geographers Medical Geography Specialty Group.

### **David B. Shindler**

President and CEO of Milestone Medica Corporation, a new national venture development company specializing in early stage biomedical technology investment and management.

Between 1990 and 1997, he served as Senior Executive and Commercial Director of the Canadian Genetic Diseases Network (CGDN) — an internationally recognized trans-Canada consortium of leading researchers and industrial partners, core funded by the federal Networks of Centres of Excellence program. During his tenure with CGDN, he led and negotiated several major technology deals that resulted in major new start-up ventures and pharmaceutical alliances. From 1988 to 1990, he served as Counsellor - Science and Technology at the Canadian High Commission in London, UK. Between 1980 and 1988, he was employed by Industry, Science and Technology Canada. He was Manager of Canada's National Biotechnology Strategy and Secretary to the Federal Science Minister's National Biotechnology Advisory Committee. Between 1974 and 1980 he was a research scientist at the National Water Research Institute, Burlington, Ontario.

David Shindler’s research expertise is in the field of microbiology and biochemistry. He has a Ph.D. from the University of Ottawa and an undergraduate degree in Biology from Temple University, Philadelphia.

### **Bruce Smith**

Chairman of the Council of Smith Institute for Industrial Mathematics and System Engineering, a collaboration between industry and academia in applied mathematics and computing, and Chairman of Industrial Technology Securities Limited, a venture

capital company. Until a recent management buyout he was the Chairman and majority shareholder of Smith System Engineering Limited, a firm specializing in the analysis and design of advanced electronic, optical and mechanical systems for both industrial and government customers. Before founding the company in 1971, he worked in design engineering for Decca Radar Limited after a period in the United States with Bellcomm Inc. in the US Space program. Prior to that he occupied a physics research post at the University of Chicago, having previously obtained a first-class honours degree and a doctorate in physics at Oxford University.

Bruce Smith is a Fellow of both the Royal Academy of Engineering and the Institution of Electrical Engineers. He is Chairman of the Economic and Social Research Council in the UK, Chairman of the Board of Trustees of the National Space Science Centre, Chairman of the Earth Observation Programme Board of the British National Space Centre, a non-executive Director of two private companies and a Domus Fellow of St. Catherine's College, Oxford.

### **Pierre Tremblay**

President of Tecta Inc.

A graduate of the Imperial College, London (1972), and recipient of an M.Sc. (electrical engineering), London University (1972), and a B. Eng. (electrical engineering), McGill (1963), Pierre Tremblay has accumulated over thirty years of experience as an engineer and researcher. He worked for the following companies from 1984 to 1998: Price Company Ltd., Alcan Electrolysis and Chemical Corporation Ltd. and the Arvida Research and Development Centre, serving as its director from 1988 to 1998.

He is an active member of numerous committees, including the management committee of the *Synergie du Fonds de développement technologique* (Quebec) program; the Selection Committee of the Networks of Centres of Excellence, and the Fonds FCAR (Le Fonds pour la formation de chercheurs et l'aide à la recherche, Quebec) joint action committee for international research and cooperation.

He was president of ADRIQ (*Association de la recherche industrielle du Québec*, Montreal) from 1989 to 1992 and has organized numerous international symposia.

### **Eva Turley**

She obtained her Ph.D. from the University of British Columbia and continued her training as a postdoctoral fellow at Johns Hopkins University and subsequently at the

University of Oregon. She is Senior Scientist in the Division of Cardiovascular Research at the Hospital for Sick Children and Professor at the University of Toronto. Over the years, her research collaborations with industry have been numerous. In 1996, she became Vice-President of Research for Hyal Pharmaceutical Corporation, and recently co-founded Transition Therapeutics and Diagnostics.

Eva Turley is a world leader in the field of cell motility, hyaluronan receptors and their regulation of signaling pathways. She has provided several pharmaceutical companies including Smith Kline Beecham, Cangene and Transition with novel ways of designing antibodies that are proving to be effective in regulating diseases as diverse as multiple sclerosis and cancer.

She is a member of the National Research Council Advisory Council and has served on numerous Boards and Panels including NRC Executive, CISTI-NRC Committee, US Army Breast Cancer Panel, and the Heart and Stroke Foundation. She is the editor for "*Women and Cancer*" and was a commentator on Genetic Research for "*Quirks and Quarks*" and "*The National*" for the CBC. In 1988, she received the YWCA Woman of Distinction Award.